Claims:

1. (currently amended) An exhaust gas catalyst system, comprising:

a substrate; and

a nitrogen oxide adsorber disposed on said substrate, the nitrogen oxides adsorber comprising:

a porous support; and

a material loaded on said porous support comprising:

a NO_x oxidation catalyst; and

~~an~~ mobile alkali material comprising sodium, potassium, cesium, rubidium, lithium, or mixtures comprising at least one of these materials; and

an early transition metal oxide alkali metal barrier disposed between the substrate and the nitrogen oxide adsorber.

2. (original) The exhaust gas catalyst system of Claim 1, wherein said porous support comprises alumina, gamma-alumina, delta-alumina, theta-alumina, zeolite, zirconia, ceria, magnesium oxide, titania, silica, or mixtures comprising at least one of the foregoing.

3. (original) The exhaust gas catalyst system of Claim 1, wherein said NO_x oxidation catalyst is platinum, palladium, rhodium, or mixtures comprising at least one of the foregoing.

4. (currently amended) The exhaust gas catalyst system of Claim 1, wherein the mobile alkali material ~~is~~ comprises potassium~~, cesium, lithium, rubidium, or mixtures comprising at least one of the foregoing~~.

5. (cancelled)

6. (currently amended) The exhaust gas catalyst system of Claim ~~5~~ 1, wherein the early transition metal oxide alkali metal barrier is a material selected from the group consisting of zirconia, titania, ferric oxide, cordierite, alpha-alumina, mullite, tin oxide, ceria, manganese oxide, silica, vanadium oxide, chromium oxide, hafnium oxide, molybdenum oxide, tungsten

oxide, and mixtures comprising at least one of these materials.

7. (currently amended) The exhaust gas catalyst system of Claim 1, wherein the early transition metal oxide alkali metal barrier is present in an amount sufficient to substantially inhibit the migration of alkali material out of said nitrogen oxides adsorber.

8. (previously presented) The exhaust gas catalyst system of Claim 1, further comprising an additional alkali metal barrier mixed with said material, wherein the additional alkali metal barrier is loaded on said porous support and present in an amount of up to about 2 g/in^3.

9. (previously presented) The exhaust gas catalyst system of Claim 8, wherein the additional alkali metal barrier is present in an amount up to about 0.35 g/in^3.

10. (previously presented) The exhaust gas catalyst system of Claim 9, wherein the additional alkali metal barrier is present in an amount up to about 0.25 g/in^3.

11. (previously presented) The exhaust gas catalyst system of Claim 10, wherein the additional alkali metal barrier is present in an amount of about 0.05 g/in^3 to about 0.20 g/in^3.

12. (cancelled)

13. (currently amended) The exhaust gas catalyst system of Claim 1, wherein the early transition metal oxide alkali metal barrier comprises an atomic film.

14. (currently amended) The exhaust gas catalyst system of Claim 1, wherein the early transition metal oxide alkali metal barrier comprises a film having a thickness of up to about 100 μ.

15. (previously presented) The exhaust gas catalyst system of Claim 1, further comprising additional alkali metal barrier mixed with said material.

16. (original) The exhaust gas catalyst system of Claim 1, further comprising a three-way catalyst component, positioned downstream of the nitrogen oxides adsorber or part of the nitrogen oxides adsorber.

17-38. (cancelled)

39. (previously presented) The exhaust catalyst system of claim 1, wherein the substrate comprises cordierite.

40. (cancelled)

41. (currently amended) The exhaust gas catalyst system of Claim ~~40~~ 39, wherein the early transition metal oxide alkali metal barrier is a material selected from the group consisting of zirconia, titania, ferric oxide, cordierite, alpha alumina, mullite, tin oxide, ceria, manganese oxide, silica, vanadium oxide, chromium oxide, hafnium oxide, molybdenum oxide, tungsten oxide, and mixtures comprising at least one of these materials.